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**PLANT 1 ORE SILOS PERFORMANCE
SPECIFICATIONS FOR DISASSEMBLY AND
PACKAGING OPERABLE UNIT 3 REMOVAL
ACTION 13 SEPTEMBER 1993 REVISION 3**

09/30/93

**FERMCO/DOE-FN
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REPORT**

**Plant 1 Ore Silos
Performance Specifications for
Disassembly and Packaging**

**Operable Unit 3
Project Order 22
WBS No. 1.1.1.1.3.2.6
Removal Action 13
September 1993
Revision 3**

**Environmental Remedial Action Project
Fernald Environmental Management Project
Fernald, Ohio
FERMCO Subcontract No. 2-21487**



**Fairfield Executive Center
6120 South Gilmore Road
Fairfield, Ohio 45014**

REVISION #3 RECORD SHEET 1 OF 1
PROJECT ORDER #22
PLANT 1 ORE SILOS
DISASSEMBLY AND PACKAGING

Description	Prepared By	CRU Manager
Added 04100, Pages 1-4, <u>Tile Silo</u> Grout Specificaion, Revision 0.	D. Higby	
Added 04155, Pages 1-8, Tile Silo Wrap Specification, Revision 0.	J. Tuli	
Revision 3, T.P., 1 Page, Revised Title Page.	E. Ohlhauser	
Revision 3, S.O.S, 1 Page, Revised Sign-Off Sheets.		
Revision 3, T.C., 2 Pages, Revised Table of Contents. Added Sections 04100 and 04155.	E. Ohlhauser	
Revision 0, S.O.S., 1 Page, Division Sign-Off Sheet, Division 4, Masonry.	E. Ohlhauser	
Note: Shaded areas indicate revision.		

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ERA/CRU No.: 3/PO-22

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U.S. DEPARTMENT OF ENERGY
FERNALD ENVIRONMENTAL MANAGEMENT PROJECT
FERMCO SUBCONTRACT NO. 2-21487

PROJECT ORDER 22
WBS NO. 1.1.1.1.3.2.6

SPECIFICATIONS

SECTION 00003

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SECTION 04100
TILE SILO GROUT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Grout for patching tile silos.

1.2 REFERENCE DRAWINGS

- A. Drawing 3679-1 - Feed Silos U.S. Atomic Energy Commission, Fernald, Ohio, by W.B. Neill Company.

1.3 REFERENCES

- A. American Society for Testing and Materials (ASTM):
1. ASTM C-109-92 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars.
 2. ASTM C-157-91 Standard Test Method for Length Change of Hydraulic Cement Mortar and Concrete.
 3. ASTM C-882-91 Standard Test for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.

1.4 SUBMITTALS

- A. Reports: Submit reports on grout indicating conformance of test and evaluation reports to ASTM C-109, C-157, and C-882.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Submit manufacturer's installation instructions.
- D. Provide manufacturer's Materials Safety Data Sheets.

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1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products per manufacturer's recommendations.
- B. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.
- C. Assure that grout has not exceeded its recommended shelf life prior to application.

1.6 PROJECT CONDITIONS

- A. To prevent further spalling of the clay tile and to enhance the support of the concrete cap, this grout is to be placed where clay tile has fallen out of tile silo (F2-26).

PART 2 PRODUCTS**2.1 MANUFACTURERS**

- A. Five Star Structural Concrete® V/O (vertical overhead).

2.2 MATERIALS

- A. Grout must be easily trowelable.
- B. Grout must maintain placability and workability for a minimum of 20 minutes.
- C. Grout must not shrink or expand more than 5 percent when tested in accordance with ASTM C-157.
- D. Grout must achieve a minimum compressive strength of 3,000 psi in 24 hours when tested in accordance with ASTM C-109.
- E. Grout must achieve a minimum bond strength of 1,200 psi in 24 hours when tested in accordance with ASTM C-882.

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2.3 ACCESSORIES

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- A. Bond breaker.
- B. Blocking material.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Coordinate with the FERMCO Construction Manager to determine limits of grouting.

3.2 PREPARATION

- A. Clean areas where grout is to be applied with a soft paint brush. Only completely loose or broken tiles shall be removed.
- B. After surfaces have been brushed clean, they shall be moistened with water from a spray bottle prior to placement of grout.
- C. Upon completion of moistening period, excess water shall be removed prior to grouting.

3.3 ERECTION/INSTALLATION/APPLICATION

- A. Block out locations where lifting beams, which are to be used to lift the concrete cap, will be located with styrofoam, wood, or other suitable material.
- B. Apply a bond breaker to the bottom of the concrete cap to prevent the grout from adhering to the concrete cap.
- C. Grout must be applied by gently packing and troweling.
- D. Apply the grout in layers per the manufacturer's recommendations.
- E. Carefully follow the manufacturer's instructions for mixing, placing, and curing of grout.

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- F. Contractor shall assure that all personnel performing the installation are experienced in hand troweling and familiar with the manufacturer's instructions for mixing, placing, and curing of grout.
- G. Follow the manufacturer's instructions for placement in cold or hot weather.

END OF SECTION

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SECTION 04155
TILE SILO WRAP

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PART 1 GENERAL

1.1 SECTION INCLUDES

- A. The scope of work in this section includes material and labor for furnishing, shipping to the site, and installation of Silo Wrap to prevent further spalling of the clay tiles of the southwest tile silo (F2-26).

1.2 RELATED SECTIONS

- A. Section 04100 - Tile Silo Grout.
- B. Plant 1 Ore Silos, Statement of Work for Southwest Silo Tile Repair.

1.3 REFERENCE DRAWINGS

- A. Drawing 3691-1 - Feed Silos U.S. Atomic Energy Commission, Fernald, Ohio, by W. B. Neill Company.

1.4 REFERENCES, CODES, AND STANDARDS

- A. Code of Federal Regulation (CFR), Revised July 1, 1992:
 - 1. 29 CFR 1910.1200 Hazard Communication.

1.5 SYSTEM DESCRIPTION

- A. Performance Requirements
 - 1. The wrap shall minimize the potential for falling of deteriorated clay tiles from the upper 5 feet of the southwest tile silo. The wrap is intended to prevent any loosened tile or tile pieces from falling. The wrap shall meet or exceed the following requirements:
 - a. The wrap must be of sufficient length to completely encircle the tile silos a minimum of one time and be a minimum of 5 feet in width.

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- b. The wrap shall resist one season of freeze-thaw cycles.
- c. The wrap will be exposed to the elements (outdoor) for a minimum of 8 months.

1.6 SUBMITTALS

The following submittals are required:

- A. Qualifications
 - 1. Years in business.
 - 2. Type of work.
- B. Schedules of Submissions
 - 1. Reference Statement of Work.
- C. Product Data
 - 1. Sizes/Thickness.
 - 2. Tensile/Shear Strength.
 - 3. Susceptibility to temperature and wind.
- D. Lab Test Reports.
- E. Manufacturer's certificates, certifying that the product meets or exceeds specified requirements.
- F. Manufacturer's installation instructions.
- G. Manufacturer's Field Reports.
 - 1. List of similar applications.
- H. Detailed description of mode of packaging and shipping.
- I. Material Safety Data Sheets (MSDSs):
 - 1. MSDSs shall be submitted to FERMC O Industrial Hygiene (IH) for any chemical compound or materials used on the project. MSDSs shall be submitted at least 1 week in advance to FERMC O IH for review prior to the chemical compound or material arriving on site. The listing of hazardous chemical/materials present, labeling of containers, and employee training and protective

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measure programs shall be in accordance with 29
CFR 1910.1200 (Hazard Communication).

J. Exceptions to the specifications, if any.

1.7 QUALITY ASSURANCE

A. Qualifications

1. The Subcontractor shall submit his qualifications regarding his performance of similar type of work especially in the following area:
 - a. Years in business.
 - b. Type of product applications.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packaging/Shipping

1. Materials shall be cleaned to remove oil, grease, debris, and other foreign matter prior to packing for shipment.
2. The Subcontractor shall be responsible for the delivery of all materials to the site. All furnished materials shall be delivered clean, undamaged, and in working condition.

B. Storage and Handling

1. Storage and handling of all materials and accessories shall conform to manufacturer's instructions.
2. The wrapping material shall be stored off the ground and handled with care so that physical damage to the material does not occur.

1.9 PROJECT CONDITIONS

A. Project Requirements

1. The clay tiles from approximately the upper 3 feet of the southwest (SW) tile silo (F2-26) are spalling. The wrap must prevent any loosened tiles or pieces of tile from falling.

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B. Environmental Conditions

1. Environment:
 - a. Outdoor, low-level radioactivity, contaminated area.
2. Plant Location:
 - a. Fernald, Ohio.
 - b. Elevation : 600 feet above sea level.
3. Climate:
 - a. Ambient Temperatures: -10 to 110 degrees F.
 - b. Barometric Pressure: 29.31 inches Hg absolute (mean at 70 degrees F).
 - c. Relative Humidity: 20 to 95 percent.

PART 2 PRODUCTS**2.1 MANUFACTURERS****A. List of Suppliers**

1. Schaaf Tarpaulin Company
2440 Spring Grove Avenue
Cincinnati, Ohio 45214
Telephone: (513) 241-7044
(800) 638 2588
Fax: (513) 241-2871
2. Shrink Wrap Systems, Inc.
25188 Telegraph Road
Brownstown, Michigan 48134
Telephone: (513) 874-2628
3. FMP Inc.
1260 E. Woodland Ave.
Springfield, Pa. 19064
Telephone: 1-800-544 1260
(215) 328-3031
Fax: (215) 328-5907

B. Product Substitution

1. Substitution of materials considered by the Subcontractor to be equal to that specified herein shall be subject to prior approval of the FERMCO Construction Manager. All such requests for substitution shall be made in writing.

2.2 PRODUCTS/EQUIPMENT

- A. The silo wrap material as stipulated under Article 1.1 of this specification.

2.3 MATERIALS

Either tarpaulin or shrink wrap may be used.

- A. Tarpaulin
1. 18-ounce vinyl coated nylon, 1 piece, brass grommets.
- B. Shrink Wrap
1. 6 mil polyethylene film.

2.4 ACCESSORIES

All necessary utilities, tools, and materials required for installation in accordance with the manufacturer's recommendation.

2.5 LABELING

- A. Labels indicating product is asbestos-free shall be attached to the outside of wrapping materials.

PART 3 EXECUTION

- A. All work performed at site shall be in accordance with the existing site procedures. The subcontractor's personnel shall be trained in accordance with the site training procedure.
- B. At the conclusion of or during the installation, any decontamination and disposal of tools or materials shall be coordinated with the FERMCO Construction Manager in accordance with the provisions of the Statement of Work.

3.1 EXAMINATION

- A. The Subcontractor shall perform all quality control visual examinations. The Subcontractor shall submit in writing a minimum of 24 hours notice to the FERMCO Construction Manager before a visual examination can be performed.
- B. Any holes or tears in the wrap shall be cause for rejection. Holes and/or tears shall be repaired in accordance with manufacturer's recommendations and shall be equivalent in strength and durability to the wrap material. All repairs shall be coordinated with and approved by the FERMCO Construction Manager.

3.2 PREPARATION

- A. Before and during application of the silo wrap, surfaces shall be dry and free of any grout splatter. Oil or grease shall be removed subject to the approval of FERMCO Construction Manager.
- B. The subcontractor shall obtain the specific approval of the FERMCO Construction Manager regarding the exact location of the wrap prior to its application.

3.3 ERECTION/INSTALLATION/APPLICATION

- A. Tarpaulin
 - 1. Tarpaulin shall be secured by attaching grommets to one another by tying, strapping, etc. The tarpaulin must be secured to prevent wind from getting under and "beating" and/or tearing the tarpaulin. The attaching material (e.g., ties, straps, etc.) shall be equivalent in strength and durability to tarpaulin material.
- B. Shrink Wrap
 - 1. The polyethylene film shall be wrapped around the silo and overlapped. The installer shall ensure that all seams are bonded and cooled in accordance with the manufacturer's instructions. The installed film shall be secured to resist damage

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by wind and weather prevalent to the local geographic area.

3.4 CLEANING

- A. All debris removal, disposal, and approval shall be coordinated with the FERMCO Construction Manager.

3.5 SCHEDULES

- A. The wrap installation shall be coordinated with grout installation and shall be installed subsequent to the grout installation.

3.6 REMOVAL

- A. Tarpaulin
 - 1. Ties, straps, etc. shall be removed.
 - 2. Remove tarpaulin prior to removing silo tiles.
- B. Shrink Wrap
 - 1. The film shall be cut and removed as each course of silo tiles are removed.

END OF SECTION